

**CLAIMS**

1. A method for implementing fast signalling in a communication connection between a base station and a mobile station of a cellular radio network, comprising the steps of:

5 - defining an arrangement of repeatedly occurring frames that consist of pieces of allocatable radio communication capacity between the base station and mobile stations communicating therewith,

- allocating pieces of radio communication capacity from the arrangement of repeatedly occurring frames to dedicated communication channels,

10 10 - allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a non-dedicated fast signalling channel and

- using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling messages between at least one mobile station and the base station.

15 2. A method according to claim 1, wherein the step of allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a non-dedicated fast signalling channel comprises the step of allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a completely non-dedicated fast signalling channel, so that all mobile stations

20 20 communicating with said base station are equally allowed to use said non-dedicated fast signalling channel.

3. A method according to claim 1, wherein the step of allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a non-dedicated fast signalling channel comprises the step of allocating a piece of radio communication capacity from the arrangement of repeatedly occurring frames to a virtually non-dedicated fast signalling channel, so that a well-defined subgroup of all mobile stations communicating with said base station are mutually equally allowed to use said non-dedicated fast signalling channel.

25 4. A method according to claim 3, comprising the step of announcing by the base station to a mobile station, into which subgroup of all mobile stations communicating with said base station the mobile station belongs.

5. A method according to claim 1, wherein the step of using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling messages comprises the substep of using a multiple access arrangement to separate fast signalling transmissions relating to several mobile stations from each other.

6. A method according to claim 5, comprising the step of separating fast signalling transmissions relating to several mobile stations from each other through frequency division multiple access.

7. A method according to claim 5, comprising the step of separating fast signalling transmissions relating to several mobile stations from each other through time division multiple access.

10 8. A method according to claim 5, comprising the step of separating fast signalling transmissions relating to several mobile stations from each other through code division multiple access.

15 9. A method according to claim 5, comprising the step of separating fast signalling transmissions relating to several mobile stations from each other through a combination of at least two of frequency division multiple access, time division multiple access and code division multiple access.

10 10. A method according to claim 1, wherein the step of using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling messages comprises the substep of transmitting a fast signalling message where a training sequence is accompanied by at least one information symbol additional to the training sequence.

20 11. A method according to claim 1, wherein the step of using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling messages comprises the substep of transmitting a fast signalling message where a training sequence is accompanied by at least one information symbol that replaces a part of the training sequence.

25 12. A method according to claim 1, wherein the step of using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling messages comprises the substep of transmitting a fast signalling message where a training sequence is selected from a number of

alternative training sequences in order to convey a piece of information through the selection of a particular training sequence.

13. A method according to claim 1, comprising the steps of:

- allocating several differently located pieces of radio communication capacity from

5 the arrangement of repeatedly occurring frames to non-dedicated fast signalling channels in the communication direction from the mobile stations to the base station and

- allowing mobile stations to choose among said allocated pieces of radio communication capacity allocated to non-dedicated fast signalling channels in order

10 to enable conveying fast signalling messages from the mobile stations to the base station in a way that is convenient to each mobile station.

14. A method according to claim 1, comprising the steps of:

- examining, whether a part of an existing dedicated communication connection between the mobile station and the base station is available for conveying fast

15 signalling messages between said mobile station and the base station and

- only if such a part of an existing dedicated communication connection between the mobile station and the base station is not found to be available for conveying fast signalling messages between said mobile station and the base station, implementing

20 the step of using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying fast signalling messages between said mobile station and the base station.

15. A method according to claim 1, comprising the steps of:

- examining, whether a part of an existing dedicated communication connection between the mobile station and the base station is available for conveying fast

25 signalling messages between said mobile station and the base station and

- only if such a part of an existing dedicated communication connection between the mobile station and the base station is not found to be available for conveying all required fast signalling messages between said mobile station and the base station,

30 implementing the step of using said piece of radio communication capacity allocated to a non-dedicated fast signalling channel for conveying those fast signalling messages between said mobile station and the base station for which no part of an existing dedicated communication connection was found to be available.